



Trust in LGA and the perceived implementation of climate change adaptation in Monduli and Longido Districts in Tanzania

Christina Moses Maeda ^{a,*} , Baltazar Mlagara Namwata ^b , Neema Penance Kumburu ^a 

^a Department of Human Capital Management and Administration, Moshi Co-operative University, Tanzania

^b Department of Community Development and Gender, Moshi Co-operative University, Tanzania

ARTICLE INFO

Keywords:

Trust
LGA
Tanzania
Implementation of climate adaptation

ABSTRACT

Local Government Authorities (LGAs) are crucial in translating national climate policies into local climate adaptation actions. While research indicates that trust influences support, attitudes, and behaviours regarding climate and environmental policies, few studies treat trust as a multidimensional concept directly linked to the implementation of local climate adaptation. Based on the organizational trust theory and policy implementation theory, this study examines how three aspects of perceived organizational trust, competence, benevolence, and integrity influence the perceived implementation of CCAS. A mixed-methods approach was employed, combining survey responses from 351 village development committee members with insights from twenty key informant interviews and six focus group discussions. Data analysis involved PLS-SEM and thematic analysis. Findings indicate that perceived benevolence and perceived integrity positively influence the perceived implementation of CCAS, whereas perceived competence does not. The study concludes that positive evaluations of local CCAS implementation are more strongly associated with perceptions of benevolence and integrity than with perceptions of competence. The study contributes to climate governance and policy implementation research by indicating that trust in LGA operates through multiple dimensions in shaping the perception of local climate adaptation implementation. The study suggests that more positive perceptions of local climate adaptation implementation may be strengthened where LGAs adopt practices that enhance their perceived integrity and benevolence, such as community oversight, participatory budgeting, capacity building and responsiveness to community climate adaptation priorities.

Introduction

Climate change poses an increasing global threat, necessitating urgent and effective implementation of adaptation strategies. Although global climate efforts have historically focused on mitigation, adaptation strategies, have increasingly gained prominence in climate policy discourse (IPCC, 2022). Despite this shift, a growing body of literature highlights a persistent “implementation gap,” in which adaptation planning is expanding while tangible on-the-ground outcomes remain limited (Birchall et al., 2023; Masud and Khan, 2024). This gap is particularly evident at the local level, where climate adaptation policies translate into concrete actions through decentralized governance systems.

Local governments are critical actors in implementing climate change adaptation, given their proximity to communities, their responsibility for delivering public services, and their role in

environmental governance (Birchall et al., 2023). However, translation of adaptation plans into effective local action remains uneven and constrained by institutional, political, and social factors. While much of the literature emphasizes material constraints such as limited finances, technical capacity, and coordination challenges (Devine et al., 2024; Malik and Ford, 2024), relational factors are increasingly recognized as important in shaping implementation outcomes.

One such factor is trust in implementing institutions. Research across environmental governance and public policy shows that trust influences citizen cooperation, policy support, and compliance with public interventions (Bjarnadóttir et al., 2025; Bodor et al., 2020; Levis and Smith, 2024; Sivonen et al., 2025; Smith and Mayer, 2018). In the context of climate change, trust is associated with greater support for climate policies and a greater willingness to engage in pro-environmental behaviour (Kulin et al., 2024; Levis and Smith, 2024). However, most of this research conceptualizes trust as a

* Corresponding author at: P.O. Box 474, Moshi, Tanzania.

E-mail addresses: christina.maeda@mocu.ac.tz (C.M. Maeda), baltazar.namwata@mocu.ac.tz (B.M. Namwata), neema.kumburu@mocu.ac.tz (N.P. Kumburu).

<https://doi.org/10.1016/j.sbr.2026.100196>

Received 9 March 2026; Received in revised form 28 May 2026; Accepted 3 June 2026

Available online 6 June 2026

3051-0643/© 2026 Elsevier Ltd. All rights reserved, including those for text and data mining, AI training, and similar technologies.

general or unidimensional construct, offering limited insight into the specific mechanisms through which trust shapes policy implementation.

Organisational trust theory provides a differentiated framework that conceptualises trust as a multidimensional construct grounded in perceptions of competence, benevolence, and integrity (Mayer et al., 1995). Emerging studies suggest that these dimensions do not influence policy outcomes in the same way (Kitt et al., 2021; Kulin et al., 2024; Palomo-Vélez et al., 2024). However, there remains limited information about how these dimensions affect perceived CCAS implementation, particularly at the local level.

This gap is especially relevant in Sub-Saharan Africa, where climate vulnerability is high, and governance systems are decentralized. In Tanzania, Local Government Authorities (LGAs) are formally mandated to implement CCAS; however, empirical evidence indicates that implementation remains limited despite the existence of national policy frameworks (Kweyu et al., 2023; URT, 2023). In response to this limitation, the study examines whether perceived organizational trust in LGAs, specifically competence, benevolence, and integrity, shapes perceptions of CCAS' implementation in semi-arid districts in Northern Tanzania. In doing so, it contributes to the climate change governance and policy implementation literature by treating trust as a multidimensional mechanism rather than a general attitude and by providing evidence from a decentralized Sub-Saharan African context, where such relationships are underexplored.

Literature review

Theoretical underpinnings

Policy implementation has long been a topic of scholarly study, with researchers trying to understand why some public policies achieve intended outcomes while others fail. A key framework in this area is the policy implementation model developed by Sabatier and Mazmanian (1980). Their model highlights both statutory variables, such as clarity of objectives, resource availability, and institutional authority, and non-statutory variables, such as public support, stakeholder cooperation, and political context, as essential factors influencing implementation outcomes. In this model, public support is seen as a crucial enabler of successful policy execution, especially in decentralized governance systems where local actors, such as LGAs in Tanzania, serve as frontline implementers (Hupe and Hill, 2021; Sabatier and Mazmanian, 1980). However, the concept of trust, particularly trust in the implementing agency, is only implicitly included in Sabatier and Mazmanian's framework and is often grouped under the broader category of public support. As a result, the model offers limited guidance on how specific aspects of community-government relationships shape judgments about implementation. This limitation is particularly relevant to climate change adaptation, where implementation often depends on continued interaction between local authorities and communities and where outcomes are partly evaluated through local experience and perception.

To address the gap in policy implementation theories, this study draws on organizational trust theory developed by Mayer et al. (1995), which conceptualizes trust as a multidimensional construct grounded in three key dimensions: competence, benevolence, and integrity. Competence refers to the perceived ability of an institution to perform effectively; benevolence reflects the extent to which the institution is seen as caring about stakeholders' welfare; and integrity refers to adherence to accepted principles such as honesty, fairness, and transparency. These dimensions provide a more specific account of how trustworthiness is formed and how it may shape stakeholder responses to implementing institutions.

The value of integrating these two perspectives lies in the fact that policy implementation theory identifies the importance of non-statutory influences on implementation, while organizational trust theory specifies the dimensions through which one such influence operates. In this study, trust is therefore treated not simply as a background condition but

as a multidimensional, non-statutory factor through which community representatives form evaluative judgments about the implementation of local adaptation. Because the dependent variable is perceived implementation of CCAS, the concern here is not whether trust directly determines implementation performance, but how perceptions of competence, benevolence, and integrity shape how implementation is understood and assessed by local actors.

Perceived implementation of CCAS is operationalized as perceived implementation effectiveness, which captures respondents' evaluations of whether climate adaptation is visible, meaningful, sustainable and whether is responsive to local needs. From this perspective, perceptions of competence, benevolence, and integrity are expected to shape how community representatives assess LGAs' implementation of CCAS. The integrated framework thus provides a basis for examining the social-relational drivers of perceived implementation of CCA in a decentralized, resource-constrained governance context.

Perceived implementation of climate change adaptation at the local government level

Policy implementation refers to the process by which government decisions are translated into actions to achieve policy objectives (Hupe and Hill, 2021). It includes the activities, decisions, and interactions in which implementing actors, especially frontline institutions, carry out policy mandates. Sabatier and Mazmanian (1980) describe it as the link between a policy's stated objectives and the results produced by administrative efforts. Implementation of CCAS refers to the extent to which LGAs are seen as addressing community adaptation needs, providing resources and training, improving community resilience, integrating adaptation strategies into local development plans, and sustaining and monitoring adaptation activities over time (IPCC, 2022).

Within Tanzania's decentralized governance framework, LGAs are the designated actors responsible for implementing CCAS at the local level. According to the National Climate Change Strategy (2021–2026) and the National Adaptation Integration Guidelines, LGAs implement CCA by integrating of CCA into local development plans, allocating resources for resilience building, engaging with vulnerable populations, monitoring the progress of adaptation activities, and ensuring the sustainability of CCA measures (URT, 2012, 2021b, 2021a). Therefore, the study conceptualizes the perceived implementation of CCAS as the LGA fulfilment of CCA functions given under the established national policy mandates as perceived by community representatives at the local level.

Dimensions of organizational trust and implementation of climate change adaptation

Three core dimensions define organizational trust: Perceived competence, perceived benevolence, and perceived integrity. These dimensions offer a foundation for understanding how community trust in LGAs influences the perceived implementation of CCAS.

Perceived competence and perceived implementation of climate change adaptation strategies

Perceived competence is the extent to which an institution is viewed as capable of fulfilling its responsibilities effectively. For local government authorities, competence concerns whether LGAs are perceived as possessing the technical ability, administrative capacity, and coordination skills needed to design, manage, and deliver adaptation interventions. Within organizational trust theory, competence is one of the principal bases for trust in an institution (Mayer et al., 1995). Among the dimensions of trust, competence has received the strongest empirical support in the climate policy literature. In Canada, Kitt et al. (2021) show that perceptions of government competence are consistently associated with support across a range of climate policy instruments. In contrast, other trust-related dimensions are less stable predictors.

Similarly, Kulin et al. (2024) find across four European countries that competence perceptions are positively associated with climate policy support, while integrity does not show the same consistent relationship. Related evidence from broader trust research also points in the same direction. (Davidovic and Harring, 2020) show that political trust and quality of government are positively linked to support for climate policies, while Levis & Smith (2024) find that trust in implementing institutions increases ecological behavior and pro-environmental attitudes in decentralized environmental governance. Together, these studies suggest that citizens are more willing to support CCA implementation when they perceive the implementing institution as competent.

The adaptation governance literature indirectly reinforces this argument, even when competence is not explicitly measured as a trust dimension. Birchall et al. (2023) show that adaptation can be constrained by governance arrangements that limit institutions' practical ability to act, while Masud and Khan (2024) identify poor understanding among policy implementers, weak inclusiveness, and top-down administration as barriers to adaptation practice. Taken together, these studies suggest that perceptions of institutional ability may shape whether community representatives view local adaptation efforts as credible and effective.

H1: Perceived competence of LGA positively influences perceived implementation of CCA

Perceived benevolence and perceived implementation of climate change adaptation strategies

Empirical studies in America, Asia, and Africa demonstrate that communities are more willing to cooperate and engage with policies and organizations they perceive as caring about their welfare and prioritizing the needs of vulnerable groups during crises (Beshi and Kaur, 2020; Grimmelikhuijsen and Knies, 2017; Termini and Kalafatis, 2021). It is reflected in actions such as providing support for climate change adaptation, demonstrating commitment to community adaptation efforts, and prioritizing citizens' well-being in adaptation initiatives (Cologna et al., 2024). In Sub-Saharan African contexts, where adaptation challenges are deeply intertwined with local livelihoods, the perceived benevolence of LGAs is particularly critical for securing community participation and sustaining adaptation initiatives (Adom et al., 2024). Within organizational trust theory, perceived benevolence is recognized as an essential dimension of trust. However, empirical studies rarely examine whether perceptions of perceived benevolence directly influence adaptation outcomes at the local government level (Mayer et al., 1995). This study examines whether perceptions of benevolence among community representatives contribute to perceptions of CCA implementation in Tanzania's semi-arid districts.

H2: Perceived LGA benevolence positively influences the perceived implementation of CCAS.

Perceived integrity and perceived implementation of climate change adaptation strategies

Perceived integrity is the extent to which local government authorities are viewed as honest, fair, transparent, and consistent in fulfilling their responsibilities (Mayer et al., 1995). In climate change adaptation, this dimension matters because implementation often entails decisions about resource allocation, beneficiary prioritization, and community communication, all of which can shape whether local actors view adaptation processes as legitimate and trustworthy. Empirical evidence on integrity in climate governance is mixed. Kulin et al. (2024) find that perceptions of politicians' integrity do not significantly predict climate policy support, and Kitt et al. (2021) likewise show that integrity is not a consistent predictor across climate policy instruments. However, Palomo-Vélez et al. (2024) report that integrity-based trust explains support for phasing out natural gas better than competence-based trust,

suggesting that integrity may become more important when issues of fairness, transparency, and institutional motives are especially salient. Similarly, Muhammad et al. (2022) find that integrity contributes to trust in government, even though it does not directly predict carbon tax acceptability. Although these studies focus mainly on policy support rather than CCAS implementation, they suggest that integrity can shape how institutions are judged in climate governance. In local adaptation settings, where communities must trust that interventions are implemented fairly and in the public interest, higher perceived integrity of LGAs is therefore expected to contribute to more positive assessments of CCAS implementation.

H3: Perceived LGA integrity positively influences the perceived implementation of CCA.

Conceptual framework from the reviewed literature

Based on the literature review foundation, this study examines whether trust in LGAs reflected through perceptions of competence, benevolence, and integrity, influences perceived implementation of CCAS. In this context, implementation is understood not as a checklist of activities but as a reflection of institutional behaviour as experienced and interpreted by community representatives. It explicitly indicates how well LGAs fulfill their mandated responsibilities for planning, resourcing, integrating, and sustaining adaptation measures, in line with Sabatier and Mazmanian's (1980) implementation model. The framework proposes that when LGAs are viewed as competent, benevolent, and guided by integrity, it is expected to contribute to more positive perception of CCAS implementation. This model guides the study's hypotheses (H1–H3), connecting trust in implementing institutions to the perceived implementation of local climate adaptation.

Methodology

Research paradigm, research design, and the study area

This study adopted a pragmatist paradigm, which emphasizes problem-solving and the flexible use of methods to address real-world issues (Creswell and Clark, 2017). Pragmatism was suitable because trust is both a measurable construct and a lived social experience, requiring quantitative analysis and qualitative interpretation. Guided by this paradigm, the study employed a mixed-methods design (Creswell and Clark, 2017), collecting survey data and qualitative insights simultaneously. This approach enhanced validity through triangulation of methods and respondents.

The study was conducted in Monduli and Longido districts of the Arusha region in Tanzania, which are semi-arid zones highly prone to recurrent droughts that threaten agro-pastoral livelihoods (NBS, 2017; URT, 2022). The impacts are evident in the 2008/2009 event, which resulted in the deaths of 56,585 cattle, 39,766 goats, and 28,883 sheep in Monduli, and 231,832 cattle, 171,435 goats, and 92,235 sheep in Longido (NBS, 2017; URT, 2022). More recently, the 2021/2022 drought affected about 195,792 residents of Monduli and 149,324 in Longido, leading to severe water and food shortages for households (IFRC, 2022). Agricultural yields also declined due to recurrent drought and erratic rainfall, which reduced crop production and household food availability, with some families surviving on only one meal a day (Rupia, S. A., 2020). Recognizing these interconnected vulnerabilities, both districts are prioritized for climate adaptation in the National Disaster Management Strategy (URT, 2022).

When it comes to trust, climate services research has shown that communities in Monduli and Longido often trust traditional leaders more than formal institutions, such as the Tanzania Meteorological Authority (TMA), for climate information (TMA, 2018). Since LGAs are officially responsible for implementing CCA, understanding how organizational trust affects the perceived implementation of CCAS is crucial.

This is especially true given the districts' high vulnerability to recurrent droughts. Monduli and Longido, therefore, provide critical areas for examining how organizational trust shapes the perceived implementation of CCAS in Tanzania's semi-arid regions.

Sample size, sampling, and data collection

The study's target population comprised Village Development Committee (VDC) members, who are community representatives involved in local governance processes. These actors serve as a link between the broader community and LGAs, representing citizen interests while also participating in planning and oversight functions. As such, they provide informed perspectives on local governance and implementation processes. The study-sampling frame consisted of 1225 VDC members from Monduli District and 1550 from Longido District. The required sample size was determined using Yamane (1967) formula at a 95% confidence level and a 5% margin of error. Based on a total sampling frame of 2775 VDC members from Monduli and Longido districts, the estimated sample size was approximately 350 respondents. The final sample size was adjusted slightly from 350 to 351 respondents to facilitate allocation across the selected villages and avoid fractional assignments in the multistage sampling process (Cochran, 1977).

To enhance representativeness and reduce sampling error, the study used a three-stage sampling strategy that allowed sampling from the district down to the smallest unit of the population. First, wards were randomly selected, seven from Monduli and six from Longido, based on proportional allocation relative to the total number of wards from the two districts (20 and 18, respectively), aligning with multistage sampling principles (Lohr, 2021). In the second stage, three villages were drawn from each selected ward. Finally, nine committee members were randomly selected via lottery from key governance committees actively involved in climate adaptation, including the village executive committee, as well as committees for natural resources, agriculture, land, grazing, water, planning, disaster management, and community services.

The Moshi Co-operative University ethics committee granted ethical clearance for the study, while study authorization was granted by the President's Office, Regional Administration and Local Government (PO-RALG). Before data collection, participants were informed about the purpose of the study, voluntary participation, confidentiality, and their right to withdraw at any time without consequence. Oral informed consent was obtained before administering the survey, conducting interviews, and facilitating focus group discussions. For interviews and focus group discussions, separate oral permission was also obtained before audio recording.

Data were gathered through a combination of questionnaires, twenty key informant interviews (KIIs), and six Focus Group Discussions (FGDs), in line with the study's mixed-methods approach. KIIs involved purposively selected officials from local government and NGOs engaged in climate change adaptation, chosen for their institutional roles and expertise, while FGDs included community members selected to reflect community diversity. Details of the qualitative participants are presented in Table A1 in the Appendix. KIIs and FGDs also began with participant briefings on the study's objectives, voluntary participation, and the right to withdraw without consequence.

Common method bias

Common Method Bias (CMB) is a systematic measurement error that arises when data on both the independent and dependent variables are collected from the same respondents, potentially inflating observed relationships (Podsakoff et al., 2012). To reduce this risk, procedural steps included ensuring respondents' anonymity, emphasizing that there are no right or wrong answers, and encouraging honesty to diminish evaluation apprehension and social desirability bias. Questionnaire items measuring different constructs were separated into distinct sections to prevent patterned responses. Statistically, Harman's single-factor test

showed that no single factor explained the most variance, indicating that CMB is unlikely. Furthermore, a full collinearity VIF approach was conducted to assess potential multicollinearity and common method bias (Kock and Lynn, 2012). The results showed VIF values of 1.906 for perceived benevolence, 1.684 for perceived competence, and 2.730 for perceived integrity. Since all values were below the recommended threshold of 3.3, common method bias was not considered a serious threat in this study (Kock and Lynn, 2012). These procedural and statistical methods support that the observed relationships are not significantly affected by CMB.

Variable measurements

The study explored trust in the LGA as a multidimensional concept, focusing on perceived benevolence, perceived competence, and perceived integrity (Mayer et al., 1995) as independent variables. Each aspect was measured with multiple items adapted from validated tools by Mayer et al. (1995) and Grimmelikhuisen & Knies (2017), which were then tailored for climate adaptation. Similarly, the items for the dependent variable were designed to reflect LGAs' roles in Tanzania, emphasizing perceived implementation of climate adaptation functions and outcomes. To enhance content validity, five public administration experts reviewed the instrument for clarity, relevance, and alignment with the LGA climate adaptation context. Their feedback led to revisions of items measuring competence, benevolence, and integrity, making them more relevant to the climate adaptation context. The updated instrument was pretested with 30 participants to evaluate clarity and comprehension. Pretest feedback showed that two items -one on resource provision and another on integrating CCA into local development plans were broad. These items were rephrased to improve clarity and strengthen their alignment with specific LGA climate adaptation functions.

The dependent variable, perceived implementation of CCAS, was measured using five items that covered resource allocation, integration of CCAS into local plans, sustainability of initiatives, and responsiveness to community needs. These items were developed based on the model proposed by Proctor et al. (2011). While implementation theory conceptualizes implementation as a multi-dimensional process involving distinct analytical components, it also recognizes that these dimensions are empirically interdependent in practice (Hupe and Hill, 2021). In a perception-based measurement approach, respondents are unlikely to evaluate institutional functioning, service delivery, and adaptation outcomes as entirely separate components. Instead, they draw on these related cues to form an overall evaluative judgment about how effectively implementation is occurring. The construct is therefore specified as a reflective latent variable capturing holistic perceived implementation effectiveness, rather than as a set of separate formative dimensions.

The validity of this specification was further assessed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Convergent validity was confirmed through satisfactory indicator loadings and Average Variance Extracted (AVE) values above the recommended threshold. In contrast, discriminant validity was established using the Heterotrait-Monotrait (HTMT) ratio and the Fornell-Larcker criterion. These results indicate that the selected items load appropriately on a single latent construct and collectively capture the broader concept of perceived implementation effectiveness within the study context. Consequently, these indicators are considered components of a single latent construct that represents the overall perception of implementation effectiveness in decentralized climate governance systems. All items used a five-point Likert scale, from 1 = strongly disagree to 5 = strongly agree, to assess agreement with each statement. This scale was chosen for its clarity and widespread use in governance and social science research.

Data analysis

Quantitative data were analyzed using PLS-SEM in SmartPLS 4, chosen for its ability to handle multiple latent constructs and its emphasis on prediction-oriented analysis, unlike CB SEM, which is aimed at theory confirmation. PLS SEM is used in this study, where its objective of analyzing the relationship between trust dimensions and the perceived implementation of CCA remains underdeveloped in developing countries. The model also includes multiple latent constructs measured by reflective indicators, requiring simultaneous assessment of measurement and structural relationships. PLS-SEM estimates these relationships while accounting for measurement error, unlike simpler regression approaches. Since the study aims to explain variance in perceived implementation and compare trust dimensions, PLS-SEM is more suitable than covariance-based SEM or traditional regression.

Qualitative data were analyzed using thematic analysis with manual coding. A total of 26 KIIs and FGDs were audio-recorded with consent and transcribed verbatim. A deductive coding framework guided by the study’s conceptual model focused on perceived competence, benevolence, integrity, and perceived implementation of CCAS. Transcripts were coded at the level of meaning units (sentences and paragraphs) using predefined categories, with sub-themes emerging within categories. Two researchers independently coded a subset of transcripts to assess interpretive consistency, resolving discrepancies through discussion and consensus before applying the final coding framework to all transcripts, thereby improving consistency and reducing bias. Integration of qualitative and quantitative data followed a convergence triangulation design, in which PLS-SEM results identifying significant relationships among trust dimensions and perceived implementation of CCAS were complemented by qualitative findings that contextualized and explained these relationships through participants’ experiences of trust in implementation processes. Qualitative themes were mapped onto quantitative constructs to enhance explanatory depth, with convergence strengthening confidence in findings and divergences providing insights into variation in implementation experiences.

Measurement model analysis (Reliability and validity)

The reliability of constructs was assessed using Cronbach’s alpha and Composite Reliability (CR). Cronbach’s alpha ranged from 0.795 to 0.859, CR values ranged from 0.879 to 0.906, indicating that perceived competence, perceived benevolence, perceived integrity, and perceived implementation of CCAS all achieved robust reliability. As shown in Table 1, all constructs exceeded the recommended threshold of 0.70 (Hair et al., 2019), confirming strong internal consistency.

Convergent validity was established through outer loadings and Average Variance Extracted (AVE). All indicator loadings ranged from 0.751 to 0.927, exceeding the 0.70 threshold and indicating strong indicator reliability. AVE values ranged from 0.639 to 0.763, all above the 0.50 cut-off, indicating that more than half of the variance in the indicators was explained by their underlying constructs as presented in Table 1

Discriminant validity was assessed using the HTMT criterion and the Fornell–Larcker test. As shown in Table 2, all HTMT values were below the threshold of 0.90, indicating acceptable discriminant validity among the constructs (Henseler et al., 2015). The Fornell–Larcker criterion further confirmed this validity since the square root of each construct’s AVE was higher than its correlations with other constructs (Hair et al., 2019). Overall, the constructs demonstrated satisfactory discriminant validity, affirming that perceived competence, perceived benevolence, perceived integrity, and perceived implementation of CCAS are distinct but related dimensions.

Model fit

The SRMR value was 0.063, below the recommended threshold of

Table 1

Measurement model result (Outer loadings, Cronbach Alpha, and Average Variance Extracted).

Constructs and Items	Outer Loadings	Cronbach Alpha	CR	AVE
Perceived Competence (COM)		0.844	0.906	0.763
LGA staff are knowledgeable about climate change adaptation issues (COM1)	0.83			
LGA has the technical skills to implement climate adaptation strategies (COM2)	0.899			
LGA demonstrates competence in managing climate-related programs (COM3)	0.891			
Perceived benevolence (BEN)		0.795	0.879	0.708
LGA supports citizens needing help with climate change adaptation (BEN1)	0.782			
LGA is committed to enhancing community climate change adaptation (BEN2)	0.874			
LGA prioritizes citizens’ well-being through climate change adaptation (BEN3)	0.866			
Perceived integrity (INT)		0.829	0.899	0.749
LGA acts in the community’s interest on climate change adaptation (INT1)	0.772			
LGA is sincere in addressing climate change adaptation (INT2)	0.890			
LGA handles climate change adaptation honestly (INT3)	0.927			
Implementation of climate change strategies (ICCAS)		0.859	0.899	0.639
Adaptation strategies address the real needs of the community (ICCAS1)	0.751			
LGAs provide the necessary resources and training for climate adaptation (ICCAS2)	0.809			
Adaptation efforts have improved community resilience (ICCAS3)	0.804			
Adaptation strategies are integrated into local development plans (ICCAS4)	0.833			
Climate adaptation strategies are sustained and monitored over time(ICCAS5)	0.799			

Table 2

HTMT ratios and Fornell–Larcker criterion.

	COM	BEN	INT	ICCAS
COM				
BEN	0.822			
INT	0.878	0.872		
ICCAS	0.594	0.673	0.728	
Fornell-Larcker Criterion				
COM	0.874			
BEN	0.667	0.842		
INT	0.819	0.701	0.865	
ICCAS	0.510	0.565	0.615	0.800

0.08, suggesting acceptable model fit (Hair et al., 2019). However, since fit indices in PLS-SEM are interpreted with caution, SRMR was considered alongside reliability, validity, path estimates, R², and Q², which met the required threshold. Overall, this indicates that the model was adequate for testing the proposed relationships.

Structural model results linking trust dimensions and perceived implementation of CCAS

Multicollinearity test, model explanatory power and predictive relevance

The multicollinearity among the predictor constructs was assessed using the VIF. The VIF values for perceived benevolence, perceived competence, and perceived integrity were 2.0, 3.1, and 3.4, respectively, all below the recommended threshold of 5.0 suggested by Hair et al. (2019). This indicates that multicollinearity was not a serious concern.

The explanatory power of the structural model, as indicated by the coefficient of determination (R^2) in Fig. 1, was 0.414, indicating that organisational trust dimensions collectively explain about 41.4% of the variance in the perceived implementation of CCAS. This indicates moderate explanatory power and highlights the important role of trust in the perceived implementation of CCAS (Hair et al., 2019). In practice, this suggests that citizens' trust in LGAs accounts for a significant portion of the variance in perceived implementation of CCAS, a substantial finding in governance and policy contexts where multiple external factors often influence outcomes. The study obtained a Stone-Geisser Q^2 value of 0.395, which confirmed the model's predictive relevance (Hair et al., 2019).

Hypothesis testing and qualitative findings

This section presents the results of the structural model for the three hypotheses regarding the influence of perceived competence, benevolence, and integrity on perceived implementation of local climate adaptation. Path coefficients, t-values, and p-values were examined to assess the statistical significance of the proposed relationships. Qualitative findings are presented alongside the quantitative results to explain how these trust dimensions are experienced in practice.

H1 predicted that perceived competence would positively influence perceived implementation of CCAS. However, the path analysis showed that this relationship was not significant ($\beta = -0.061$, $p = 0.440$, $f^2 = 0.002$); hence, H1 was not supported. This indicates that, in this context, perceptions of the technical skills and expertise of the LGA alone were insufficient to explain the perceived implementation of CCAS. The qualitative findings help explain this result through three recurring themes: fragmented coordination, donor dependence and limited visibility of LGA outputs. First, the fragmented coordination weakened confidence in LGA oversight. As one NGO representative in Longido explained: "There is no landscape-level coordination at the LGA level; multiple NGOs duplicate projects unknowingly" (KII-NGO5). Second, the dependence on external stakeholders made competence difficult to attribute directly to LGA, as the communities often associate tangible

CCAS with external stakeholders for essential resources: FGD participant pointed out that "We depend totally on stakeholders for tree seedlings... if our government were stronger in climate adaptation issues, we would be much further than we are now" (FGD-L1). Third, the limited visibility of LGA output contributed to perceptions that local government responses were more reactive than proactive. FGD participants from Monduli observed that: "Local government officers do not seem strong in dealing with climate change... they mostly come around only when they hear that there is a problem already" (FGD-M1). Taken together, these themes help explain why perceived competence did not emerge as a significant predictor in the quantitative model. Competence may be difficult for community members to observe directly, in a resource-constrained context, especially where visible climate adaptation outputs are donor-dependent or unevenly coordinated.

H2 predicted that perceived benevolence would positively influence the perceived implementation of CCAS. The path analysis shown in Table 3 supports this relationship, demonstrating that perceived benevolence has a significant and positive influence on perceived implementation of CCAS ($\beta = 0.273$, $p = 0.001$, $f^2 = 0.061$). Although the effect size is small (Changalima and Chuwa, 2025; Hair et al., 2019), it remains meaningful in the Tanzanian governance context, where moral responsibility and institutional care are more visible to community members.

Three recurring qualitative themes explain this statistical result. First, community care was evident in officials' willingness to address climate adaptation, even though the duties related to climate change were unclear. As one ward executive officer in Longido explained: "No specific individual or department is officially tasked with addressing climate change. We do it as part of our regular duties out of concern for our community" (KII-WEO-L2). This illustrates perceived benevolence as a moral duty rooted in caring for citizens. Second is a duty of care expressed in everyday governance. The FGD participant in Monduli noted: "Yes, climate change adaptation is an important topic in our village meetings. We focus on planting trees and protecting the environment" (FGD-M3). This reflects a community-focused duty of care in which adaptation becomes part of everyday governance practices.

Overall, the quantitative data and qualitative themes align to demonstrate that perceived benevolence fosters trust in LGAs and promotes cooperation in adaptation efforts. The result does not suggest that benevolence alone guarantees effective implementation. Rather, it shows that when LGAs are seen as caring, responsive, and attentive to community needs, they are more likely to be viewed as effective in implementing local climate adaptation.

H3 proposed that perceived integrity would positively influence perceived implementation of CCAS. The hypothesis was strongly supported by the results, with a significant effect ($\beta = 0.473$, $p < 0.001$, $f^2 =$

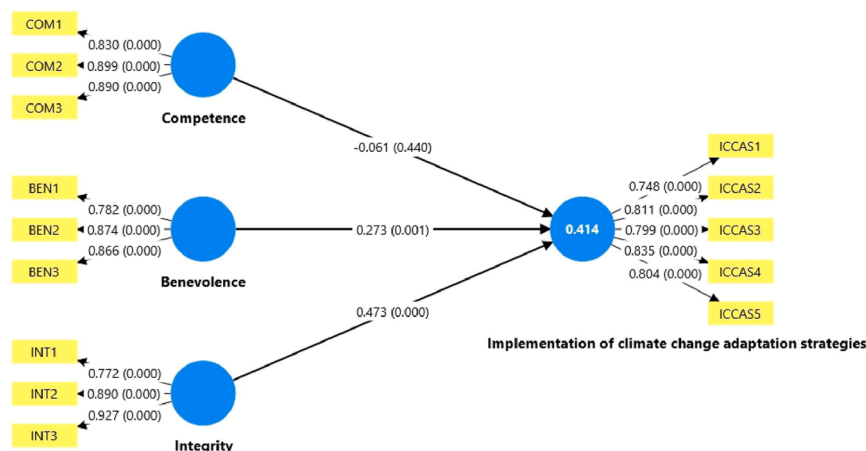


Fig. 1. Structural equation model showing the relationship obtained between Trust dimensions and perceived implementation of CCAS.

Table 3

The relationship between perceived competence, perceived benevolence, and perceived integrity on perceived implementation of CCA.

Relationship	VIF	β	t-value	p-value	Confidence interval	f ²	Decision
COM → ICCAS	2.074	-0.061	0.772	0.440	-0.208 to 0.103	0.002	Not supported
BEN → ICCAS	3.195	0.273	3.443	0.001	0.123 to 0.437	0.061	Supported
INT → ICCAS	3.494	0.473	4.918	< 0.001	0.276 to 0.653	0.109	Supported

Note: β = standardized path coefficient; f² = effect size; p-values are based on bootstrapping.

0.109). Perceived integrity showed the largest path coefficient among the three trust dimensions, indicating a moderate effect size and suggesting that perceptions of fairness, honesty, and ethical conduct within LGAs substantially strengthen positive evaluation of implementation climate adaptation. The qualitative analysis identified three recurring themes that help explain the significant effect of perceived integrity on perceived CCAS implementation: sincerity in respecting agreed decisions, honest handling of adaptation processes, and procedural fairness. Participants associated integrity with LGAs adhering to decisions made in village meetings. As one participant observed, “Anything related to climate change adaptations or development of the village generally is discussed in village meetings, and what is agreed upon in the general village meeting is what is implemented and signed with the council” (FGD-M2). Integrity was also related to the honest handling of resources, as reflected in the statement “The council supervises larger projects to ensure proper utilisation of the resources, ensuring that the limited resources we get from the stakeholders are utilised effectively” (FGD-L1). Procedural fairness also emerged in the selection of participants for adaptation initiatives. One NGO respondent explained, “Whenever we recruit participants for adaptation projects, the LGA calls village meetings and ensures that groups are formed fairly, so that all categories of people in the village are included” (KII-NGO4). Together, these themes indicate that perceived integrity is experienced through sincerity, honest conduct, and fair procedures, helping explain why integrity was strongly associated with more positive evaluations of CCAS implementation.

Discussions

This section discusses how trust in LGA, conceptualised as perceived competence, perceived benevolence, and perceived integrity, influences the perceived implementation of CCAS at the local level. Drawing on a convergent mixed-methods design involving 351 VDCs and complementary interviews with LGA officials, NGO representatives, and a focus group with the community members, the findings show that perceived benevolence and perceived integrity had a significant positive influence on the perceived implementation of CCAS, whereas perceived competence did not. The integration of both qualitative and quantitative data strands in this study provides a more robust understanding of the results. Triangulating survey findings with document analysis and interviews not only helped validate key findings but also revealed deeper organizational patterns. For instance, while quantitative data showed statistical significance in perceived benevolence and perceived integrity, qualitative data explained why these attributes mattered, illuminating the lived realities of climate adaptation governance in resource-constrained environments.

In this study, perceived benevolence and perceived integrity were significantly associated with perceived implementation of CCAS. Benevolence was demonstrated by whether LGAs appeared genuinely concerned with the community's welfare beyond mere administrative responsibilities. Participants linked this to prioritising local needs, involving villagers in planning, and addressing climate-related risks. Integrity, on the other hand, was reflected in LGAs being viewed as fair, honest, and consistent in resource management and implementation. Respect for village resolutions, adherence to agreed-upon rules, and community oversight through local committees were seen as indicators of institutional integrity. These practices appeared to enhance the

legitimacy of local climate adaptation efforts and foster positive perceptions of implementation.

The importance of benevolence and integrity in this study aligns with recent research indicating that perceptions of caring and fairness enhance support for climate policy initiatives. Geiger et al. (2022) found that perceived caring boosts support for climate policies, while Palomo-Vélez et al. highlight that integrity-based trust can be more influential than competence-based trust in some situations. Gomm et al. (2025) also show that benevolence, competence, and integrity are all significant in environmental policymaking. These findings imply that, in the Tanzanian local governance context, communities assess adaptation efforts not just by formal duties or visible results but also by whether local authorities act fairly, transparently, and with genuine concern for their well-being. Here, benevolence and integrity are key factors in how implementation is perceived and judged.

Unlike benevolence and integrity, perceived competence did not significantly predict perceived implementation of CCAS in this study. This is analytically important since organizational trust theory identifies competence as one of the key dimensions of trust (Mayer et al., 1995). Qualitative insights indicate that this outcome is closely linked to the institutional context where adaptation occurs. Respondents frequently described LGA as lacking the practical tools, resources, and coordination needed for effective adaptation. In contrast, NGO-led initiatives were more often associated with visible support such as seedlings, water infrastructure, and training. They also highlighted fragmented roles and overlapping responsibilities within institutions, which diminished perceptions of administrative effectiveness. The findings align with adaptation research indicating that implementation is hindered by poor administrative capacity, limited inclusivity, poor coordination, and restricted access to information and resources (Birchall et al., 2023; Masud and Khan, 2024).

The non-significant effect of perceived competence can be understood in light of the local implementation context. One possible explanation is that in resource-constrained, decentralized environments, competence is less visible to community members and thus harder to assess directly. Instead, communities evaluate competence based on visible results, such as whether climate adaptation support arrives in a timely and meaningful manner. When such results depend on donors, are inconsistent, or suffer from poor coordination, it becomes difficult to distinguish LGA competence from broader system weaknesses. In this way, competence may be more noticeable when resources, coordination, and role clarity are stronger. This contrasts with higher-capacity settings, where perceived competence is more consistently linked to climate and environmental policy support (Kitt et al., 2021; Kulin et al., 2024; Davidovic and Harring, 2020). Overall, the findings imply that the link between trust and perceived implementation depends on context. When technical capacity is limited or less apparent, local actors may rely more on moral and relational cues rather than technical assessments. Benevolence and integrity thus become more vital in community evaluations of CCA implementation. This study extends policy implementation theory by emphasizing trust as a multidimensional, non-statutory factor shaping perceived CCA implementation in local governance, while also applying organizational trust theory to climate change adaptation.

These results have significant implications for local climate governance. The importance of perceived benevolence and integrity indicates that fostering institutional trust involves more than technical skills; it

requires relational and ethical governance. For LGAs, this means that climate adaptation initiatives may focus on community needs and emphasise fairness and moral responsibility when implementing CCA. Transparent decision-making, respect for participatory processes, and consistent support for, and action in, the interests of local needs can bolster public trust, facilitate the integration of adaptation plans, increase community compliance, and ensure more sustained implementation. These results suggests for institutional reforms and capacity building that prioritize trustworthiness alongside efficiency, forming the foundation for successful climate adaptation implementation.

Study limitations

While this study provides important insights into the relationship between organizational trust and perceived implementation of CCAS, several limitations should be acknowledged. The findings are context-specific, drawn from Longido and Monduli districts, and may not be directly transferable to other regions with different ecological risks. Although the study used validated survey tools and triangulated findings through qualitative methods, some subjectivity may remain in self-reported measures of trust. Nonetheless, efforts were taken to mitigate these limitations through careful instrument design, stakeholder engagement, and methodological triangulation. Moreover, the study uses data from VDCs, which are key community representatives in local governance systems. While their perceptions offer valuable insight into CCA implementation processes, their perspectives may not fully capture the views of the wider community.

Conclusion and recommendations

This study contributes to the growing literature on climate policy governance, particularly climate change adaptation, by highlighting how trust in LGAs, particularly perceived benevolence and integrity, shapes perceptions of CCAS implementation at the local level. While competence is typically emphasized in policy discourse, local evaluations of climate adaptation implementation may depend more strongly on whether LGAs are perceived as acting in the community's interest, addressing adaptation sincerely and honestly, supporting citizens who need help, and prioritizing community well-being. Based on this, the study proposes the following actionable recommendations for enhancing both policy and local climate adaptation practices.

First, LGAs, working in collaboration with the Prime's Minister Office–Regional Administration and Local Government (PMO-RALG), may strengthen perceived integrity and make adaptation decisions and resource use more transparent by formally respecting agreed community priorities and by demonstrating that adaptation actions are carried out in the community's interest. Practices such as open village-level planning, participatory budgeting, and community oversight mechanisms may help make these integrity-related qualities more visible. Donors and NGOs can reinforce these efforts through capacity building, and funding for integrity-monitoring tools that align with local priorities.

Second, LGAs, with support from PMO-RALG, may strengthen perceived benevolence by demonstrating visible commitment to community adaptation, responding to citizens in need, and prioritizing community well-being in adaptation activities. This may include responsive engagement with vulnerable groups, greater attention to local adaptation needs, and leadership practices that signal concern for citizens rather than mere administrative compliance. Donors and NGOs may support these efforts through benevolent leadership development projects and community-responsive adaptation projects.

Third, although perceived competence was not statistically significant, the qualitative findings indicate that technical and managerial weaknesses continue to shape how local adaptation is experienced. In this respect, PMO-RALG, the Ministry of Finance and Planning, and development partners may help make LGA competence more visible by improving coordination among adaptation actors, strengthening staff

capacity in implementing CCA and providing stable technical and financial support.

Recommendation for future studies

Future research could further examine the role of perceived competence in climate adaptation governance, particularly by distinguishing between technical, managerial, and relational competence. Longitudinal or experimental studies may also help explain how trust develops alongside institutional performance over time. In addition, future studies could explore mediating factors, such as donor involvement or political will, to better understand how trust in LGAs shapes perceived implementation in resource-limited settings. Comparative research across Tanzanian districts and East African regions may also enhance the findings' broader applicability. While this study treated perceived implementation as a reflective construct and obtained acceptable measurement results, future research could examine whether a multidimensional approach may have additional insights. Future studies may also combine perception-based measures with objective implementation indicators, such as budget allocations, completed adaptation projects, monitoring records, service delivery data, and community outcome measures, to provide a fuller understanding of perceived and actual CCAS implementation.

Funding

This work is funded by Moshi Co-operative University through an internal scholarship program to pursue doctoral studies.

Data Availability

The datasets generated and analyzed during this study are available from the corresponding author upon reasonable request.

Ethical approval and consent

Ethical approval was obtained from the Moshi Co-operative University Ethical Committee. In addition, official authorization to conduct the study was granted by the President's Office, Regional Administration and Local Government (PO-RALG). Informed oral consent was obtained from all participants prior to interviews, questionnaire administration, and focus group discussions.

CRedit authorship contribution statement

Christina Moses Maeda: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Baltazar Mlagara Namwata:** Writing – review & editing, Validation, Supervision, Conceptualization. **Neema Penance Kumburu:** Writing – review & editing, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We thank all respondents from Monduli and Longido districts for generously sharing their time, perspectives, and experiences during this study. We are also grateful to the early reviewers from the Department of Human Capital and Administration and the Directorate of Postgraduate Studies at Moshi Cooperative University for their constructive feedback

and support throughout the research process.

Appendix 1

Table A1
Qualitative data collection participants.

Method	District	Participant category	Broad role/group composition	Gender	Number of participants
KII	Monduli	Local government officials	District- and ward-level administrators	2 females, 3 males	5
KII	Longido	Local government officials	District- and ward-level administrators	2 females, 5 males	7
KII	Monduli and Longido	NGO and CBO representatives	Staff involved in climate change adaptation	5 females, 3 males	8
FGD-M1	Monduli	Community members from the sampled villages	Village residents	2 females, 4 males	6
FGD-M2	Monduli	Community members from the sampled villages	Village residents	3 females, 7 males	10
FGD-M3	Monduli	Community members from the sampled villages	Village residents	4 females, 3 males	7
FGD-L1	Longido	Community members from the sampled villages	Village residents	2 females, 4 males	6
FGD-L2	Longido	Community members from the sampled villages	Village residents	4 females, 6 Males	10
FGD-L3	Longido	Community members from the sampled villages	Village residents	4 females, 4males	8
Total KIIs					20
Total FGDs					6 groups

References

Adom, R.K., Simatele, M.D., Das, D.K., Mukalazi, K.A., Sonwabo, M., Mudau, L., Sithole, M., Kubanza, S., Vogel, C., Zhou, L., 2024. Enhancing climate change adaptation governance through transforming institutions in Kwa-Zulu Natal Province, South Africa. *Int. J. Clim. Change Strateg. Manag.* 16 (4), 413–438. <https://doi.org/10.1108/IJCCSM-12-2022-0157>.

Beshi, T.D., Kaur, R., 2020. Public Trust in Local government: explaining the role of good governance practices. *Public Organ. Rev.* 20 (2), 337–350. <https://doi.org/10.1007/s11115-019-00444-6>.

Birchall, S.J., Bonnett, N., Kehler, S., 2023. The influence of governance structure on local resilience: enabling and constraining factors for climate change adaptation in practice. *Urban Clim.* 47, 101348. <https://doi.org/10.1016/j.uclim.2022.101348>.

Bjarnadóttir, S., Fairbrother, M., Ólafsdóttir, S., Beckfield, J., 2025. When trusting the state is not enough: broader institutional trust and public support for energy transition policies. *Environ. Sociol.* 11 (1), 40–51. <https://doi.org/10.1080/23251042.2024.2381152>.

Bodor, Á., Varjú, V., Grünhut, Z., 2020. The effect of trust on the various dimensions of climate change attitudes. *Sustainability* 12 (23), 10200. <https://doi.org/10.3390/su122310200>.

Changalima, I.A., Chuwa, M.P., 2025. Partial least squares structural equation modeling (PLS-SEM) in business research: a simple guide for novice researchers. *Int. J. Res. Bus. Soc. Sci.* 14 (9), 497–506. <https://doi.org/10.20525/ijrbs.v14i9.4601>.

Cochran, W.G., 1977. *Sampling techniques*, 3d ed. Wiley.

Cologna, V., Kotcher, J., Mede, N.G., Besley, J., Maibach, E.W., Oreskes, N., 2024. Trust in climate science and climate scientists: A narrative review. *PLOS Climate* 3 (5), e0000400. <https://doi.org/10.1371/journal.pclm.0000400>.

Creswell, J.W., Clark, V.L.P., 2017. *Designing and Conducting Mixed Methods Research*. Sage publications.

Davidovic, D., Harring, N., 2020. Exploring the cross-national variation in public support for climate policies in Europe: the role of quality of government and trust. *Energy Res. Soc. Sci.* 70, 101785. <https://doi.org/10.1016/j.erss.2020.101785>.

Devine, D., Stoker, G., Jennings, W., 2024. Political trust and climate policy choice: evidence from a conjoint experiment. *J. Public Policy.* 44 (2), 327–343. <https://doi.org/10.1017/S0143814X23000430>.

Geiger, N., Sarge, M.A., Comfort, R.N., 2022. An examination of expertise, caring and salient value similarity as source factors that garner support for advocated climate policies. *Environ. Commun.* 16 (6), 788–804. <https://doi.org/10.1080/17524032.2022.2080242>.

Gomm, S., Huber, R.A., Kolcava, D., Smith, E.K., Bernauer, T., 2025. Procedural inclusiveness can mitigate trust challenges in environmental policymaking. *J. Eur. Public Policy* 32 (10), 2539–2565. <https://doi.org/10.1080/13501763.2024.2413458>.

Grimmelikhuijsen, S., Knies, E., 2017. Validating a scale for citizen trust in government organizations. *Int. Res. Adm. Sci.* 83 (3), 583–601. <https://doi.org/10.1177/0020852315585950>.

Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* 31 (1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>.

Henseler, J., Ringle, C.M., Sarstedt, M., 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science* 43 (1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>.

Hupe, P., Hill, M., 2021. *Implementing public policy: an introduction to the study of operational governance*. *Implementing Public Policy*.

International Federation of Red Cross and Red Crescent Societies (IFRC), 2022. Tanzania Drought – Disaster Relief Emergency Fund (DREF) Emergency Plan of Action (EPoA). <https://adore.ifrc.org/Download.aspx?FileId=490685>.

IPCC, 2022. Intergovernmental panel on climate change (IPCC). (2022). climate change 2022: impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel On Climate Change. <https://doi.org/10.1017/9781009325844>.

Kitt, S., Aksen, J., Long, Z., Rhodes, E., 2021. The role of trust in citizen acceptance of climate policy: comparing perceptions of government competence, integrity and value similarity. *Ecol. Econ.* 183, 106958. <https://doi.org/10.1016/j.ecolecon.2021.106958>.

Kock, N., Lynn, G., 2012. Lateral collinearity and misleading results in variance-based SEM: an illustration and recommendations. *J. Assoc. Inf. Syst.* 13 (7), 546–580. <https://doi.org/10.17705/1jais.00302>.

Kulin, J., Johansson Sevä, I., Fairbrother, M., 2024. Political trust and public support for climate policy in Europe: the role of perceptions about politicians' competence and integrity. *Environ. Res. Commun.* 6 (9), 095013. <https://doi.org/10.1088/2515-7620/ad5ccf>.

Kweyu, R.M., Asokan, S.M., Ndesanjo, R.B., Obando, J.A., Tumbo, M.H., 2023. Climate governance in Eastern Africa: the challenges and prospects of Climate change adaptation policies. In: Onyango, G. (Ed.), *State Politics and Public Policy in Eastern Africa*. Springer International Publishing, pp. 347–369. https://doi.org/10.1007/978-3-031-13490-6_16.

Levis, A., Smith, E.K., 2024. Trust in implementing institutions, ecological behavior and decentralized environmental governance: the case of Switzerland. *Swiss Polit. Sci. Rev.* 30 (4), 357–384. <https://doi.org/10.1111/spsr.12625>.

Lohr, S.L., 2021. *Sampling: Design and Analysis*, 3rd ed. Chapman and Hall/CRC. <https://doi.org/10.1201/9780429298899>.

Malik, I.H., Ford, J.D., 2024. Addressing the climate change adaptation gap: key themes and future directions. *Climate* 12 (2), 24. <https://doi.org/10.3390/cli12020024>.

Masud, S., Khan, A., 2024. Policy implementation barriers in climate change adaptation: the case of Pakistan. *Environ. Policy Gov.* 34 (1), 42–52. <https://doi.org/10.1002/eet.2054>.

Mayer, R.C., Davis, J.H., Schoorman, F.D., 1995. An integrative model of organizational trust. *Acad. Manag. Rev.* 20 (3), 709–734. <https://doi.org/10.5465/amr.1995.9508080335>.

Muhammad, I., Mohd Hasnu, N.N., Ibrahim, M.A., Abdul Hamid, S., Mohd Hanefah, M., 2022. Trust in government and its determinants: an empirical study of public acceptability for carbon tax in Malaysia. *Sustainability* 14 (23), 15684. <https://doi.org/10.3390/su142315684>.

- National Bureau of Statistics (NBS), 2017. National Environment Statistics Report, 2017 Dar es Salaam, Tanzania Mainland. https://www.nbs.go.tz/nbs/takwimu/Environment/NESR_2017.pdf.
- Palomo-Vélez, G., Perlaviciute, G., Contzen, N., Steg, L., 2024. Trusting the minister or trusting the mayor? perceived competence and integrity of central and local Dutch institutions governing energy matters. *Environ. Res. Commun.* 6 (4), 045009. <https://doi.org/10.1088/2515-7620/ad3f7d>.
- Podsakoff, P.M., MacKenzie, S.B., Podsakoff, N.P., 2012. Sources of Method Bias in Social Science Research and Recommendations on How to Control It. *Annual Review of Psychology* 63 (1), 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>.
- Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., Hensley, M., 2011. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Adm. Policy Ment. Health Ment. Health Serv. Res.* 38 (2), 65–76. <https://doi.org/10.1007/s10488-010-0319-7>.
- Rupia, S.A., 2020. *Impacts of Climate Change On Food Security in Northern Tanzania: A case of Monduli District* [Masters Dissertation. The Open University of Tanzania]. <https://repository.out.ac.tz/2639/1/SCARION%20ANATORY%20RUPIA%20tyr.pdf>.
- Sabatier, P., Mazmanian, D., 1980. The implementation of public policy: a framework of analysis. *Policy Stud. J.* 8 (4), 538–560. <https://doi.org/10.1111/j.1541-0072.1980.tb01266.x>.
- Sivonen, J., Härmä, V., Karvonen, S., 2025. Exploring climate nudge attitudes—the significance of perceived climate change knowledge, science trust, and media trust. *Humanit. Soc. Sci. Commun.* 12 (1), 565. <https://doi.org/10.1057/s41599-025-04783-2>.
- Smith, E.K., Mayer, A., 2018. A social trap for the climate? collective action, trust and climate change risk perception in 35 countries. *Glob. Environ. Change* 49, 140–153. <https://doi.org/10.1016/j.gloenvcha.2018.02.014>.
- Termini, O., Kalafatis, S.E., 2021. The paradox of public trust shaping local climate change adaptation. *Atmos. (Basel)* 12 (2), 241. <https://doi.org/10.3390/atmos12020241>.
- TMA, T. M. A., 2018. Enhancing Uptake and Use of Climate Information Services (CIS) By Smallholder Farmers in Tanzania. <https://aaltoglobalimpact.org/pbl-east-africa/pictures/Capstone%202018%20TMA%20report.pdf>.
- URT, 2012. Guidelines For Integrating Climate Change Adaptation Into National Sectoral Policies, Plans and Programmes of Tanzania. URT. <https://www.vpo.go.tz/uploads/publications/en-1592644632-GUIDELINES-FOR-INTEGRATING-CLIMATE-CHANGE-ADAPTATION-INTO-NATIONAL-SECTORAL-POLICIES-PLANS-AND-PROGRAMMES-OFTANZANIA.pdf>.
- URT, 2021a. National Climate Change Response Strategy (2021-2026). URT. https://www.taees.org/wp-content/uploads/2021/09/NCCRS-2021-2026_Final_PK.pdf.
- URT, 2021b. National Environmental Policy. <https://www.vpo.go.tz/uploads/publications/sw-1644923087-NATIONAL%20ENVIRONMENTAL%20POLICY%202021%20new.pdf>.
- URT, 2022. National Disaster Management Strategy 2022–2027. Prime Minister's Office, Disaster Management Division. [Government Document]. <https://www.pmo.go.tz/uploads/documents/sw-1677564328-National%20Disaster%20Management%20Strategy%202022%20E2%80%93%202027.pdf>.
- URT, 2023. United Republic of Tanzania (URT). Tanzania's 2023 Voluntary National Review (VNR) Report on the Implementation of the 2030 Agenda for Sustainable Development. Ministry of Finance and Planning. <https://www.mof.go.tz/uploads/documents/en-1689095112-Tanzania%20VNR%20FINAL%202023%20including%20statistical%20annex%20%281%29>.
- Yamane, T. (1967). *Statistics: An introductory analysis*.